BULLETIN

OF THE INSTITUTE OF METALS

VOLUME 5 NOVEMBER 1959 PART 3

INSTITUTE NEWS

A Successful Metal Physics Meeting

A very successful meeting, arranged by the Metal Physics Committee, was held in the historic Lecture Theatre of the Royal Institution, London, on Thursday, 12 November, when there was a Symposium on " The Application of Thin-Film Techniques to the Electron-Microscopic Examination of Metals ", based on a series of papers published in the August issue of the *Journal*. There was an attendance of about 300.

Presentation of the Rosenhain Medal

Before the Symposium, the President presented to Professor R. W. K. HONEYCOMBE, B.Sc., Ph.D., Professor of

The President (Mr. G. L. Bailey) handing the Rosenhain Medal to Professor R. W. K. Honeycombe.

Physical Metallurgy in the University of Sheffield, the 1959 Rosenhain Medal, in recognition of his outstanding contributions in the field of physical metallurgy.

Professor Honeycombe, who was born in Australia, was educated at Geelong College and the University of Melbourne, at which he carried out research on the formation of tungsten carbide–cobalt alloys. From 1942 to 1947 he worked at what is now known as the Division of Tribophysics of the Commonwealth Scientific and Industrial Research Organization, under Dr. F. P. Bowden, on two main fields—bearing alloys and the plastic deformation of metals—and he collaborated with Dr. W. Boas in researches which led to an appreciation of the role of the anisotropy of thermal expansion in causing stresses and plastic deformation in non-cubic metals when they are thermally cycled.

He came to England in 1948 with an I.C.I. Fellowship to Cambridge, where he carried out researches on the deformation of metal single crystals and made use of metallographic and X-ray techniques to study, in particular, inhomogeneities such as deformation bands.

In 1951, Dr. Honeycombe was appointed Senior Lecturer in Physical Metallurgy at the University of Sheffield and in 1955 to the Chair of Physical Metallurgy. At Sheffield he has maintained his interest in metal single crystals and has led a series of investigations into the deformation of alloy crystals, including dilute solid solutions and precipitation-hardening crystals. He has also studied carbide precipitation in alloy steels, using the electron microscope. Electron-microscopic methods have also been applied to the study of intergranular fracture in alloy steels. His other current research interests include recrystallization, fatigue, and ductile fracture.

In acknowledging the award of the medal, Professor Honeycombe recalled that he was educated at the same university as Rosenhain, in whose memory the medal had been founded.

Electron Microscope Symposium

Dr. N. P. ALLEN, M.Met., F.I.M., F.R.S., Member of Council, took the chair at the morning session of the Symposium when papers were presented by Dr. M. J. WHELAN, of the Cavendish Laboratory, Cambridge; Dr. P. B. HIRSCH,

Dr. N. P. Allen opening the Symposium.

also of the Cavendish Laboratory; and Dr. D. W. PASHLEY and Mr. A. E. B. PRESLAND of the Tube Investments Research Laboratories.

In the afternoon, the Chair was taken by Professor Sir

Lawrence BRAGG, O.B.E., M.C., F.R.S., when four more papers were presented, respectively, by Mr. R. B. NICHOLSON, Dr. G. THOMAS, and Dr. J. NUTTING, of the University of Cambridge; Dr. W. BOLLMANN, of the Battelle Memorial Institute, Geneva; Mr. W. PITSCH, from the Max-Planck-Institut für Eisenforschung, Düsseldorf; and Mr. G. A. BASSETT and Dr. D. W. PASHLEY, of the Tube Investments Research Laboratories.

There were many contributors to interesting discussions at both the morning and afternoon sessions. It is hoped to publish a summary of the discussions at an early date.

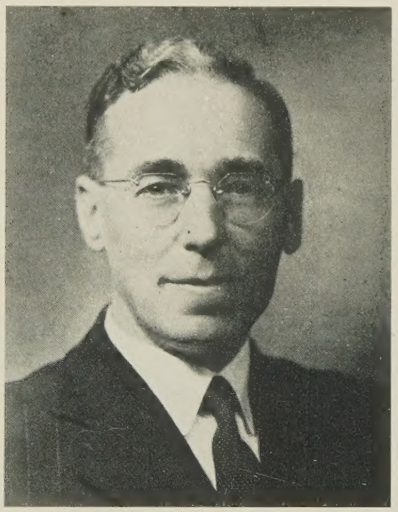
At the conclusion of the Symposium a series of films was shown, dealing with dislocations, precipitation, and the annealing of radiation damage.

Conversazione

On the evening before the Symposium, a conversazione was held at the Institute's Headquarters, 17 Belgrave Square, which provided a welcome opportunity for many people with similar interests to meet informally before the meeting. There was an interesting exhibition of electron micrographs, apparatus, and models, and during the evening a series of four films was exhibited.

Senior Vice-President for 1960–61

The Council have elected Professor H. O'NEILL, M.Met., D.Sc., F.I.M., to be Senior Vice-President for the year 1960–61, and he will be their nominee for the Presidency in 1961–62.



A native of Sheffield and a graduate of Sheffield University, Professor O'Neill has been Professor of Metallurgy at University College, Swansea, since 1947. Before that he was for more than twenty years Chief Metallurgist to the L.M.S. Railway Company. He was President of the Institution of Metallurgists in 1952.

Indexes to the " Journal " and " Metallurgical Abstracts "

The indexes to the *Journal*, Vol. 86 (1957–58), and *Metallurgical Abstracts*, Vol. 25, have now been distributed. If any member or subscriber did not receive them, application should be made to the Secretary.

Election of Members

The following 18 Ordinary Members, 3 Junior Members, and 6 Student Members were elected on 23 October 1959:

As Ordinary Members

ANANT NARAYAN, Sathya Narayana Shastri, B.A., B.Sc., M.Met.E., D.Sc., F.I.M., Managing Director, Nickel Information Bureau Private, Ltd., Union Bank of India Building, Pherozshah Mehta Road, Fort, Bombay 1.

BARR, William, B.Sc., S.M., Research Metallurgist, British Iron and Steel Research Association, 140 Battersea Park Road, London, S.W.11.

CLIFTON, Peter Vincent, M.A., D.Phil., A.R.I.C., General Sales Manager, Air Products (Great Britain), Ltd., 49 Poland Street, London, W.1.

COOPER, Lloyd Ryder, B.S., Chief Metallurgist, Pittsburgh Plant, Heppenstall Company, 4620 Hatfield Street, Pittsburgh 1, Pa., U.S.A.

DEMER, Louis Joseph, M.S., Associate Professor, Department of Mining and Metallurgical Engineering, School of Mines, University of Arizona, Tucson 25, Ariz., U.S.A.

ENSOR, Percy Richard, A.M.I.Mech.E., Works Manager, IVI Works, The British United Shoe Machinery Co., Ltd., Hildyard Road, Leicester.

GUPTA, Prem Ray, B.Sc., Metallurgical Engineer, Khandelwal Ferro Alloys, Ltd., 63 Mall Road, Kamptee, Nagpur District, India.

HEDEBRANT, Olle Sigfrid, M.S., Manager, Engineering Research Department, Sandviken Jernverks AB, Sandviken, Sweden.

KADDOU, Abdul-Fattah K., M.S., Ph.D., Lecturer, Department of Mining and Metallurgy, University of Wisconsin, 1509 University Avenue, Madison 5, Wis., U.S.A.

LISTER, Thomas Stott, B.Sc., F.I.M., Chief Metallurgist, B.S.A. Tools, Ltd., Birmingham 33.

LOWE, Joseph Samuel, M.I.Gas Eng., M.Inst.F., Director, Gibbons Brothers, Ltd., Dibdale, Dudley.

PARKES, Arthur Reginald, Metallurgical Editor, *Foundry Trade Journal*, John Adam Street, London, W.C.2.

POSTER, Arnold Robert, B.S., M.Met.E., Head, Powder and Parts Department, Sylvania Electric Products, Inc., Towanda, Pa., U.S.A.

RIDER, Guy Alfred, Director, Birmid Industries, Ltd., Dartmouth Road, Smethwick 40, Staffs.

SCHMITZ, Gerhard, Manager, Walzmaschinenfabrik August Schmitz, Neusserstrasse 101–115, Düsseldorf, Germany, and Laminoirs G.m.b.H., Thun, Switzerland.

VAIDYANATH, L. R., B.Sc., Ph.D., Production Manager, Khandelwal Ferro Alloys, Ltd., 63 Mall Road, Kamptee, Nagpur District, India.

WILKINSON, Denis H., Assistant Metallurgist, Keighley Laboratories, Ltd., Croft House, South Street, Keighley, Yorks.

WRIGHT, Edward Scott, B.S., Research Scientist, Lockheed Aircraft Corporation, Metallurgy and Ceramics Department, 3251 Hanover Street, Palo Alto, Calif., U.S.A.

As Junior Members

BOURNE, David Richard, B.Eng., Assistant Experimental Officer, Research and Development Department, Dounreay Experimental Reactor Establishment, Thurso.

SEXTON, Peter Allen, L.I.M., Research Metallurgist, Johnson, Matthey and Co., Ltd., Wembley, Middlesex.

SMART, Ernest, L.I.M., Assistant Metallurgist, Samuel Fox and Co., Ltd., Stocksbridge, near Sheffield.

As Student Members

AGRAWAL, Vinod Kumar, B.Sc., Graduate Student, School of Chemical and Metallurgical Engineering, Cornell University, Ithaca, N.Y., U.S.A.

BAGLEY, Brian, B.S., Project Assistant, Department of Mining and Metallurgy, University of Wisconsin, 1509 University Avenue, Madison 6, Wis., U.S.A.

GOLDBERGER, Erwin, Indust. Eng., Student, Postgraduate School of Physical Metallurgy, University of Sheffield.

JONES, Howard, Undergraduate, Department of Metallurgy, University of Manchester.

LEWIN, Roger, Technical Apprentice, Metallurgical Department, Samuel Fox and Co., Ltd., Stocksbridge, near Sheffield.

UPADHYAYA, Gopal Shankar, B.Sc., Student, Department of Metallurgy, Hindu University, Varanasi 5, India.

The following 6 Ordinary Members, 1 Junior Member, and 29 Student Members were elected on 6 November 1959:

As Ordinary Members

BREEKVELDT, Gysbert Jo, M.A., Technical Adviser (Europe), The Anaconda Sales Co., London.

FISHER, Bernard, B.Sc., Partner, Raworth, Moss and Cook, London.

GILBERT, Harry, Technical Officer, Imperial Chemical Industries, Ltd., Metals Division, Birmingham.

VANDERPUYE, Nee Attoh, M.A.Sc., Research Investigator, Department of Metallurgy, Battersea College of Technology, London.

WALD, George Gustav, M.S., Metallurgist, Lockheed Aircraft Corp., Burbank, Calif., U.S.A.

WHITTON, Peter William, B.Sc., Ph.D., D.I.C., A.M.I.Mech.E., Head, Metal Deformation Section, Research Department, Imperial Chemical Industries, Ltd., Metals Division, Birmingham.

As Junior Member

CONNELLY, Bernard William, Assistant Metallurgist, T.I. Technological Centre, Walsall.

As Student Members

ALCOCK, Anthony Guest, Undergraduate, Royal School of Mines, London.

AMOS, John Charles Edward, Undergraduate, Royal School of Mines, London.

BAILES, David Graham Kesin, Undergraduate, Royal School of Mines, London.

BRIDGES, John Maurice, Undergraduate, Royal School of Mines, London.

CHAMPION, Albert Frederick, B.A., Research Student, Department of Metallurgy, Imperial College of Science and Technology, London.

COLE, David, Metallurgist, John Rigby and Sons, Ltd., Bradford.

DEELEY, Richard Montague, Undergraduate, Royal School of Mines, London.

EVANS, David William, Undergraduate, Department of Metallurgy, University of Sheffield.

EVANS, Michael Arthur, Undergraduate, Department of Metallurgy, University of Liverpool.

FRAY, Derek John, Undergraduate, Royal School of Mines, London.

GAZZARD, Simon Thomas, Undergraduate, Royal School of Mines, London.

GRANGER, Douglas Arthur, Undergraduate, Department of Metallurgy, University of Manchester.

GUIRALDENQ, Pierre, L. ès Sc. Phys., Chercheur, Centre de Recherches Métallurgiques, Ecole Nationale Supérieure des Mines, Paris, France.

HUGHES, David Gerald, B.Sc., Metallurgist, Atomic Weapons Research Establishment, Aldermaston, Berks.

MIDDLETON, Malcolm Cecil, A.Met., Technical Apprentice, Samuel Fox and Co., Ltd., Sheffield.

MOORE, Thomas William, Technical Apprentice, Samuel Fox and Co., Ltd., Sheffield.

MORDEN, Alan J. F., Undergraduate, Royal School of Mines, London.

NEUFELD, Peter, Undergraduate, Royal School of Mines, London.

OLIVER, Brian Robert, Undergraduate, Royal School of Mines, London.

PECK, Roger, Undergraduate, Royal School of Mines, London.

PHILLIPS, John William Burbridge, Undergraduate, Department of Metallurgy, King's College, Newcastle-upon-Tyne.

RICHARDS, John Harvey, Undergraduate, Royal School of Mines, London.

RICHINSON, Peter John, B.Met., Research Metallurgist, English Electric Co., Ltd., Whetstone, Leicester.

SARGENT, Gordon, Undergraduate, Royal School of Mines, London.

SMITH, Frank Thomas John, Undergraduate, Royal School of Mines, London.

TURNER, Paul A., Undergraduate, Royal School of Mines, London.

USHER, John Dyson, Undergraduate, Royal School of Mines, London.

WILLIAMS, John Adrian, Undergraduate, Department of Metallurgy, University College of Swansea.

WILSHAW, Thomas Rodney, Undergraduate, Royal School of Mines, London.

PERSONAL NOTES

MR. C. E. ABBOTT has left Ferranti, Ltd., and is now with Mining and Chemical Products, Ltd., Alperton, Middlesex.

MR. A. T. ALDRED has been appointed a Research Fellow in Physical Metallurgy at Birmingham University.

MR. S. C. ANTHONY has been appointed General Manager of Aluminium Ingot Makers, Ltd., Yeadon.

MR. R. E. BARDSLEY has left Texas Western College, El Paso, where he obtained the B.S. degree in Metallurgical Engineering, and is now employed by the General Electric Company at the Hanford Atomic Products Operation, Richland, Wash.

DR. MAURICE COOK retires on 31 December from the position of Chairman of Imperial Chemical Industries, Ltd., Metals Division, which he has held for the last two years. He joined the Company in 1926 and subsequently became Research Manager, Director in charge of Research and Development, and, from 1951 to 1957, Joint Managing Director. Dr. Cook is a Past-President and Platinum Medallist of the Institute.

M. P. Coulomb has left the Centre de Recherches Métallurgiques de l'Ecole Supérieure des Mines, Paris, and taken up an appointment in the laboratory of the Compagnie des Ateliers et Forges de la Loire, Unieux (Loire).

Mr. D. E. Davies has left University College, Swansea, and is now at the Royal Naval Torpedo Factory, Alexandria, Dunbartonshire.

Dr. E. Eichen has left the University of Birmingham and is now in the Research and Development Laboratories of the Allegheny Ludlum Steel Corp., Brackenridge, Pa.

Dr. V. W. Eldred has been appointed Research Manager (Metallurgy) in the Research and Development Branch of the U.K. Atomic Energy Authority, Development and Engineering Group, Windscale Works, Cumberland.

Mr. P. R. V. Evans has left Metropolitan-Vickers Electrical Co., Ltd., and is now at the Armour Foundation of the Illinois Institute of Technology, Chicago, Ill.

Mr. A. J. Eycott is now with Rolls-Royce, Ltd., Derby.

Mr. P. Flatley has left Imperial Chemical Industries, Ltd., Metals Division, to become a Group Manager (Production) with the U.K. Atomic Energy Authority at its Springfields Works, near Preston.

Dr. V. Griffiths has left the University of British Columbia and is now at Montana School of Mines, Butte, Mont.

Mr. R. Hazzard has joined Atomic Power Constructions, Ltd., London.

Mr. J. W. F. Hitchon has been awarded a French Government Technical Co-operation Fellowship and is now working at the Institut de Recherches de la Sidérurgie, St. Germain-en-Laye (S. et O.).

Mr. H. A. Hoare has taken up an appointment as metallurgist with A.E.I.-Hotpoint, Ltd., Peterborough.

Mr. E. F. Hodges has been appointed Chief Metallurgist to The Knowsley Cast Metal Co., Ltd., Manchester.

Mr. A. M. Horsfield has left the British Welding Research Association to take up an appointment in the Plant and Equipment Department of ESAB, Ltd., Gillingham.

Mr. D. B. Hunter has been appointed Group Leader in the Non-Destructive Testing Laboratories of the Martin Company, Baltimore, Md.

Mr. F. L. Jagger has left the Atomic Energy Research Establishment, Harwell, to become Lecturer in Metallurgy at the Bradford Institute of Technology, Bradford.

Mr. D. W. Jones has been appointed a Research Fellow in Physical Metallurgy at Birmingham University.

M. Marcel Lamourdedieu has been appointed Directeur, L'Aluminium Français, Paris.

Mr. W. A. Lowe has left Imperial Chemical Industries, Ltd., Metals Division, and is now in the Metallurgy Division of the Atomic Energy Research Establishment, Harwell.

Mr. W. H. Lowther has been appointed Lecturer in Engineering Metallurgy at the Darlington College of Further Education, Darlington.

Miss F. Macbride has left High Duty Alloys, Ltd., and is now at the Training College for Technical Teachers, Huddersfield.

Mr. D. J. Marsh has left Brooke Tool Manufacturing, Ltd., and is now a metallurgist in the Development and Engineering Group of the U.K. Atomic Energy Authority, Springfield Works, near Preston.

Mr. M. L. Melvill has left Boart Products Manufacturing Co. to join the Nickel Technical Information Office in Johannesburg, as a Development Officer.

Dr. A. G. Metcalfe has left the Armour Research Foundation, Chicago, and has been appointed Assistant Director of Advanced Research to the Solar Aircraft Company, San Diego, Calif.

Mr. D. Moore has graduated from the Royal School of Mines and is now a Scientific Officer on the staff of the U.K. Atomic Energy Authority, Springfield Works, near Preston.

Dr. R. Nordheim is now Senior Research Engineer in the Process Metallurgy Section of Jones and Laughlin Steel Corp., Pittsburgh.

Mr. J. T. Orme has left the University of Sheffield and taken up an appointment with the Atomic Weapons Research Establishment, Aldermaston.

Mr. P. G. Partridge has left the Cavendish Laboratory, Cambridge, and taken up a post with the Nuclear Research Group of the Central Electricity Generating Board.

Dr. L. B. Pfeil, Managing Director (Research and Technical) of The Mond Nickel Co., Ltd., was awarded the Sainte-Claire Deville Medal at the recent Autumn Meeting of the Société Française de Métallurgie.

Mr. J. J. Preisler has been appointed Department Head for Materials Laboratories, Sperry Gyroscope Company, Great Neck, N.Y.

Mr. D. T. Read is now at the Atomic Energy Department of the General Electric Co., Ltd., Erith.

Mr. A. C. Reed has left Teddington Refrigeration Controls, Ltd., and joined Sandberg, Ltd., Consulting Engineers, London.

Mr. M. R. Reeve has left Imperial Chemical Industries, Ltd., to become Senior Research Metallurgist with Foundry Services International, Ltd., Birmingham.

Mr. D. V. Rowles has been appointed Technical Director of Fielding and Platt, Ltd., Gloucester.

Dr. P. G. Shewmon, Assistant Professor of Metallurgy at the Carnegie Institute of Technology, has been awarded the Alfred Noble Prize for 1959.

Mr. R. D. Spencer has left Mallory Metallurgical Products, Ltd., and is now metallurgist with Northern Electric Co., Montreal.

Mr. P. H. Spriggs is now engaged in research in the Metallurgy Department, University of Manchester.

Mr. N. Swindells has left Manchester University, having gained an Honours degree in Metallurgy, and is now at the A.E.I. Research Laboratories, Aldermaston.

Mr. W. J. M. Tegart has been appointed a Lecturer in Metallurgy in the University of Sheffield.

Mrs. J. R. Thomson (*née* Murray) has left the Atomic Energy Research Establishment, Harwell, and is now at the Department of Metallurgy, Imperial College, London.

Mr. G. L'E. Turner has been appointed Lecturer in Crystallography in the Metallurgy Department at Battersea College of Technology.

Mr. P. J. Wray has left the Carnegie Institute of Technology and taken up an appointment in the Development and Research Department of The Mond Nickel Co., Ltd., Birmingham.

Deaths

The Editor regrets to announce the deaths of:

Mr. L. van Ouwerkerk, JMLzn, Managing Director of Röntgen Technische Dienst N.V., Rotterdam, on 25 October 1959.

M. Marcel Marius Tournaire, Chef des Recherches et des Laboratoires, Compagnie Générale du Duralumin et du Cuivre, on 8 October 1959.

POWDER METALLURGY JOINT GROUP

Papers for Publication in "Powder Metallurgy"

(1) The Powder Metallurgy Joint Committee will be glad to receive papers of high quality for publication in *Powder Metallurgy*. Such papers will be considered for publication from non-members as well as members of the Powder Metallurgy Joint Group. They will be accepted for publication in *Powder Metallurgy* and not necessarily for presentation at any meeting of the Joint Group. MSS. should be addressed to The Editor, *Powder Metallurgy*, 17 Belgrave Square, London, S.W.1.

(2) *Papers suitable for publication* may be classified as:

(*a*) Results of original research.
(*b*) First-class reviews or accounts of progress.
(*c*) Descriptions of works methods or recent developments in powder-metallurgical plant and practice.

(3) *Manuscripts and illustrations*, which should be submitted in duplicate, must be typewritten (double-line spacing) on one side of the paper only.

(4) *Presentation*. In the interests of economy, all papers must be written as concisely as possible; in general, internal research reports are not in suitable form for publication as papers. All but the simplest mathematical expressions should be written by hand, with capital and small letters clearly distinguished. Superscript and subscript letters should also be plainly indicated. Greek letters and special signs should be identified in the margin.

(5) *Abstract*. Every paper must have an abstract (not exceeding 250 words in length) suitable for use by abstracting organizations. In the case of a paper reporting original research, the abstract should state the ground covered and the nature of the results.

(6) *References*, collected at the end of the paper, must be numbered in the order in which they occur in the MS. Initials of authors must be given, and the abbreviations for periodical titles used in *Metallurgical Abstracts* should be employed, where known. References to papers should be set out in the style: L. G. Carpenter and W. N. Mair, *J. Inst. Metals*, 1959, **88**, 38 (i.e. year, volume, page). References to books should be in the style: W. Dawihl, "A Handbook of Hard Metals". **1955**: London (H.M. Stationery Office).

(7) *Illustrations:*

(*a*) *Numbering and Description*. Each illustration must have a number and description: only one set of numbers must be used in one paper. The captions should be typed on a separate sheet.

(*b*) *Line Figures* sent for reproduction must be drawn (about twice the size to appear in *Powder Metallurgy*) in Indian ink on smooth white Bristol board, good-quality drawing paper, or tracing cloth, which are preferred in the order given. Co-ordinate paper, if used, must be blue-lined with the co-ordinates to be reproduced finely drawn in Indian ink. Curves should be drawn boldly (i.e., at least twice the thickness of the frame). Experimental points should be indicated by open or closed circles, triangles, squares, etc. (preferably not crosses). Curves should be broken on each side of such symbols and plenty of allowance should be made for closing up in reproduction. Where drawing-office facilities are available, the diagrams should be lettered in plain upright capitals of suitable size, in Indian ink. The second set of line illustrations may be photostat copies.

(*c*) *Photographs* must be restricted in number, owing to the expense of reproduction, and photomicrographs should be trimmed to the smallest possible of the following sizes consistent with adequate representation of the subject: 4 in. wide by 3 in. deep; 2 in. wide by 3 in. deep; 2 in. square. Magnifications of photomicrographs must be given in each case. Photographs for reproduction should be loose, not pasted down (and not fastened together with a clip, which damages them), and the figure number and author's name should be written on the back of each. Captions should be given to the photomicrographs, but these should be kept as brief as possible.

(8) *Tables or Diagrams*. Results of experiments, &c., may be given in the form of tables or figures, but (unless there are exceptional reasons) not both. Tables should bear Roman numbers, and each should have a heading that will make the data intelligible without reference to the text.

(9) *Reprints*. 25 reprints (without covers) are presented to each author; further copies may be purchased at rates to be obtained from the Editor, if ordered in advance of printing in *Powder Metallurgy*.

JOINT ACTIVITIES

Symposium on "The Determination of Gases in Metals", London, 3 and 4 May 1960

As previously announced, a Symposium on "The Determination of Gases in Metals", organized by the Society for Analytical Chemistry in conjunction with The Iron and Steel Institute and The Institute of Metals, will be held at Church House, Great Smith Street, London, S.W.1, on 3 and 4 May 1960. The following contributions, which will be available on sale prior to the meeting, are expected to be presented:

(a) *Review papers on:*

"The Determination of Oxygen", by W. J. Elwell (Imperial Chemical Industries, Ltd., Metals Division).

"The Determination of Hydrogen", by R. J. L. Eborall (British Non-Ferrous Metals Research Association).

"The Determination of Nitrogen", by J. D. Hobson (Hadfields, Ltd.).

(b) *Other Scientific Papers:*

"Determination of Gases in Metals by Vacuum Fusion", by J. E. Still (General Electric Co., Ltd.).

"Determination of Nitrides in Metals", by H. F. Beeghly (Jones and Laughlin Steel Corp., U.S.A.).

"The Determination of Gases in Metals by the Semi-Micro Vacuum-Fusion Technique", by A. Parker (United Kingdom Atomic Energy Authority).

"The Determination of Oxygen in Beryllium Metal by Activation Analysis", by R. F. Coleman (United Kingdom Atomic Energy Authority).

"X-Ray Emission Analysis and the Determination of Gases in Metals", by T. Mulvey (Associated Electrical Industries,Ltd.).

"Sampling of Liquid Metals", by T. B. King (Massachusetts Institute of Technology, U.S.A.).

"Spectrographic Determination of Gases", by V. A. Fassel (Iowa State College, U.S.A.).

"Carrier Gas Techniques", by C. E. A. Shanahan (Richard Thomas and Baldwins, Ltd.).

"The Determination of Hydrogen in Cast Iron", by L.W. L. Smith (British Cast-Iron Research Association).

"The Application of Internal-Friction Measurements to the Determination of Gases in Metals", by G. M. Leak (British Iron and Steel Research Association).

Seventh Commonwealth Mining and Metallurgical Congress

The Seventh Commonwealth Mining and Metallurgical Congress will take place in the Union of South Africa and in Northern and Southern Rhodesia from 10 April to 21 May 1961. A preliminary brochure is now available and may be obtained from the Congress Manager, P.O. Box 809, Johannesburg, S. Africa.

NEWS OF LOCAL SECTIONS AND ASSOCIATED SOCIETIES

Oxford Local Section

The new Chairman of the Section is Dr. G. A. GEACH, Head of Physical Metallurgy at the Research Laboratory of Associated Electrical Industries, Ltd., Aldermaston, Berks.

Dr. Geach studied chemistry at Sheffield and then carried out research under Professor J. H. Andrew in the Metallurgy Department of the University from 1937 to 1941. In that year he joined the staff of the Research Department of Metropolitan-Vickers Electrical Co., Ltd., Manchester, a member of the A.E.I. group. At the opening of the A.E.I. Research Laboratory at Aldermaston in 1947, he was transferred there to take charge of the metallurgical work.

Dr. Geach has been a member of the Metal Physics Committee for a number of years, and he is also a member of the Powder Metallurgy Joint Committee.

Scottish Local Section

Members are asked to note that the following meetings have now been arranged; details were not available in time for inclusion in the "Programme of Meetings for the Session 1959–60", distributed in September:

January 18. Mr. P. G. Forrester (The Glacier Metal Co., Ltd.): "New Developments in Bearing Materials".

February 22. Mr. A. L. Wakeling (Bull's Metal and Marine, Ltd.): "The Manufacture of Ships' Propellers".

March 21. Miss Dorothy Pile (British Jewellers' Association): "Metals Used in the Jewellery and Silverware Industries" (Ladies Night).

All the meetings will be held at the Institution of Engineers and Shipbuilders in Scotland, 39 Elmbank Crescent, Glasgow, C.2, at 6.30 p.m.

OTHER NEWS

"Lead—the Enduring Metal"

A sound film entitled "Lead—the Enduring Metal" was recently shown to the Press. It is a 16-mm. colour film that runs for 28 min.

Intended to interest non-technical audiences, the film has been designed to offer general information on lead. After briefly tracing its history and ancient usage, the film shows the metal's occurrence in the world today and how it is mined, smelted, and refined.

The main sequences demonstrate the versatile role played by lead in the modern world and deal with applications which include sheet and pipe for building, paints, chemical engineering, lead shot, grids and oxides for storage batteries, type metals for printing, solder, electric cable sheaths, and lead glass.

Copies of the film may be borrowed, free of charge, on application to the Lead Development Association, 18 Adam Street, London, W.C.2.

"Metallurgy and Semi-Conductor Devices"

A special course of six lectures is to be given at Kingston Technical College on the subject: "Metallurgy and Semi-Conductor Devices." The speaker will be Mr. A. S. Abrahams, and lectures will be given on Tuesday evenings beginning on 5 January 1960. The fee for the course is 12*s.* 6*d.* Applications should be made to the College at Fassett Road, Kingston-on-Thames.

"Some Metallurgical Aspects of Iron Foundry Technology"

A special course of eight lectures on "Some Metallurgical Aspects of Iron Foundry Technology" will be given on successive Wednesdays, beginning on 13 January 1960, at the Derby and District College of Technology. The course is being arranged by the Department of Chemistry at the College in collaboration with the British Cast Iron Research Association. The fee for the course is three guineas. Applications should be made to Mr. M. McIntyre at the College, Kedleston Road, Derby.

World Directory of Crystallographers

A second edition of the World Directory of Crystallographers is being prepared. The Editor of this edition is Dr. D. W. Smits, of Groningen, Netherlands, but bio-

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graphical information is being collected for each country by a sub-editor in that country.

It is intended to include in the Directory all practising crystallographers, including advanced graduate students. Readers in the United Kingdom who consider their names should be included in the Directory, but who have not received a questionnaire are requested to write to: Dr. P. T. Davies, "Shell" Research Limited, Thornton Research Centre, P.O. Box 1, Chester.

DIARY

Local Sections and Associated Societies

5 January. Oxford Local Section. "Brittle Fracture", by Professor N. J. Petch. (Cadena Café, Cornmarket Street, Oxford, at 7.0 p.m.)

7 January. Birmingham Local Section. To be arranged. (College of Technology, Gosta Green, Birmingham 4, at 6.30 p.m.)

7 January. Leeds Metallurgical Society. "Modern Developments in Metallurgical Analysis", by K. M. Bills. (Location to be announced.)

7 January. London Local Section. "The Rolling of Aluminium", by F. Kasz. (17 Belgrave Square, London, S.W.1, at 6.30 p.m.)

12 January. South Wales Local Section. "Metals in Antiquity" by L. Biek. (Royal Institution, Swansea, at 7.0 p.m.)

13 January. Manchester Metallurgical Society. "The Newer Methods of Steelmaking", by J. Pears. (Manchester Room of The Central Library, Manchester, at 6.30 p.m.)

18 January. Scottish Local Section. "New Developments in Bearing Materials", by Mr. P. G. Forrester (Institution of Engineers and Shipbuilders in Scotland, 39 Elmbank Crescent, Glasgow, C.2, at 6.30 p.m.)

21 January. Birmingham Local Section. "Physical Methods of Analysis", by K. M. Bills. (College of Technology, Gosta Green, Birmingham 4, at 6.30 p.m.)

21 January. East Midlands Metallurgical Society. "The Development from Manuscript to Roman Type", by N. Angus (The School of Art, Green Lane, Derby, at 7.30 p.m.)

21 January. Liverpool Metallurgical Society. Student Prize Competition. (Joint meeting with the University of Liverpool Metallurgical Society) (Library of the Department of Metallurgy, University of Liverpool, 146 Brownlow Hill, Liverpool 3, at 7.0 p.m.)

21 January. Sheffield Local Section. Lecture by Dr. H. Sutton (details to be announced). (Applied Science Building of the University, St. George's Square, Sheffield, at 7.30 p.m.)

26 January. North East Metallurgical Society. "Production and Properties of Nodular Cast Irons", by H. Morrogh. (Cleveland Scientific and Technical Institution, Corporation Road, Middlesbrough, at 7.30 p.m.)

27 January. Manchester Metallurgical Society. "The Theoretical Background to Corrosion", by R. A. U. Huddle. (Manchester Room of The Central Library, Manchester, at 6.30 p.m.)

28 January. Southampton Metallurgical Society. Films: "Grain Structure"; "Carbon Contact"; "Heat-Treatment". (Engineering Block, Southampton University, at 7.15 p.m.)